



MANUAL OF OUTPOST DUTIES.

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MANUAL

OF

OUTPOST DUTIES,

WITH

Instructions for the Defence

OF

DETACHED HOUSES, VILLAGES,
BRIDGES, &c.

FOR THE

USE OF VOLUNTEERS.

BY

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"Reading and discourse are requisite to make a soldier perfect in the art military, how great soever his practical knowledge may be."—*Monk, Duke of Albermarle.*

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PREFACE.

The first duty of a Volunteer, and especially of a volunteer officer, is to make himself thoroughly acquainted with the elementary drill of that branch of the service to which he belongs. This drill is fully laid down in the "Cavalry Regulations," "The Field Exercise and Evolutions of Infantry," and other works published under the direction of the "Horse Guards."

As a volunteer officer I soon discovered that the drill laid down in these works was, mere elementary drill, and that little or no instruction was contained in them, as to how it was to be employed in active service. I found that to improve myself in the knowledge of my duties, it was necessary to read the scientific military works which treat of the various uses of armies, and parts of armies in active operations. These works I found very expensive, and very difficult to obtain in this country. I have almost invariably been obliged to import them specially for my own use.

Knowing, therefore, the difficulty and expense of getting books of this nature, I thought that a

little manual of outpost duty, with suggestions on the defence of houses and villages, compiled from the best English and French authorities, and published at a cheap rate, would be a valuable book for those members of the Volunteer Force who might wish to learn a little more than the mere routine drill; and consequently, I have written the following pages for their use.

I do not claim any originality in the views I express in this manual. I have seen no service, and cannot therefore give any opinions based on personal experience. I have merely compiled the substance of what I have read in the following works, viz. :—"Short's Vade Mecum, or Manual of Outpost Duties;" "Lord FitzClarence's Manual of Outpost Duties;" "Jervis' Manual of Field Operations;" General Jebb's Attack and Defence of Outposts;" "Nolan's Tactics of Cavalry;" "Beamish's Use and Application of Cavalry in War;" "Brack's Avant-Postes de Cavalerie Légère;" "De La Tactique Des Trois Armes, par C. de Decker;" and the "Cours D'Art et D'Histoire Militaires;" by Humbert.

This work is not one applicable only to Cavalry. It is mainly intended for the use of the infantry

Volunteers, the duties of sentries, being on that account treated at some length. The general principles, however, are suitable to both branches of the service.

The duties I have discussed in the following pages are the most important that soldiers ever have to perform, and if this Manual should be of any use to my comrades in the Volunteer Force, and if it should serve in any degree to increase the knowledge of an important duty among a Force in which I have taken the deepest interest for the last eleven years, I shall feel amply repaid for the trouble I have taken in compiling it for them.

GEORGE T. DENISON, JUN.

TORONTO, 14th March, 1866.

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PART I.

OUTPOSTS.

CHAPTER I.

Definition.

The many essential duties of a soldier which require him to leave his ranks—the cooking of rations, the necessity of sleep, the impossibility of men working or being under arms for any lengthened period, renders it physically impossible for an army to be at all moments, both by day and night, in constant readiness to oppose the attack of a vigilant enemy.

It is therefore necessary that a portion of an army should be always under arms, and in a position to prevent the surprise of the remainder, and so to impede the attack of an enemy as to enable preparations to be made by the whole army, to resist the assaults that might be made upon it.

This object is accomplished by detaching to the front flanks, and in some cases to the rear, a chain of guards and posts, who continually watch the enemy's movements, secure the position from surprise, and throw every impediment in the way of a hostile attack.

These guards are called outposts, and the whole system the chain of outposts. Necessity obliges

this chain of outposts in the presence of an enemy to be constantly in a state preparation ; these duties are the most fatiguing and trying that a soldier is called upon to perform, and as detachments of this kind tend to weaken the main body, the chain can never be of sufficient strength to alone answer the end required.

It is customary, therefore, to preserve a portion of the main army in camp in a stricter state of readiness than the rest, so that in case an attack is made upon the outposts they may promptly support them—these bodies are called inlying pickets.

As it would be impossible to preserve a chain of sentries or posts, so numerous as not to be liable to be forced or surprised, especially at night or in foggy weather, a system has been adopted of sending small bodies along the line from post to post, as near to the enemy as possible to supply the deficiency of sentries and to keep alive that vigilance of the men on duty which is so essential to the security of the army.

The chain of outposts consists of main guards, outlying pickets and sentries. The main guards occupy all the principal approaches to the camp and should be of sufficient strength to resist the first shock of an attack ; these main guards detach to their front and flanks smaller parties called pickets, who cover all the approaches to the main guards, and at the same time preserve the communication with the posts on their right and left. These pickets detach sentries or videttes in front of their position communicating with the sentries of the contiguous pickets on the right and left, so that the sentries form one continuous chain.

In addition to this the pickets detach small

parties which march out to the front of the sentries, and taking a circle beyond the stationary posts as near to the enemy as possible, return *by the other flank* to the picket. These parties which are called patrols are sent out in order to obtain the earliest information of the enemy's movements, to discover any offensive dispositions in his line, and to keep alive a vigilance and activity among the sentries, without which their services would be of no avail.

It is also the duty of these patrols and advanced posts to get the earliest intimation of any change of the advanced posts of the enemy's line, of any movements in his camp, and to send in specific reports thereof; to resist attacks upon single posts, and to oppose general attacks upon the whole line so as to enable the main body to form itself in a position for action.

It is desirable that the chain of outposts should be at an equal distance from the line; and that if there are any points where an attack is to be apprehended, the outposts should there be proportionately strengthened.

It is necessary, sometimes—in order to have all the videttes or sentries in constant communication with the pickets from which they are detached to send forward smaller parties under command of non-commissioned officers to positions whence they can have the whole line of videttes or sentries in sight. This is only done in covered or broken ground where the picket cannot see them. The smaller parties are called intermediate posts.

The principles which regulate the distances in the disposition of a chain of posts depends so entirely upon the nature of the ground and other circumstances, that no fixed rules can be laid down.

The following general principles ought to be observed however :—

1st. That the less the distance of the chain of posts from the main body, the greater must be the preparature and vigilance of the camp.

2nd. That the strength of the chain must be in proportion to its distance from the main body.

3rd. That the strength of the posts must be in proportion to the natural or artificial capabilities of the ground for defence.

5th. No post ought to consist of less than three reliefs, exclusive of patrols. Reconnoitring parties consist of three to six men. The French posts always have four reliefs.

6th. Cavalry posts may be thrown much in advance of infantry *when the country is adapted to this arm*, as their celerity prevents their being easily cut off, and they can report to the rear much quicker.

7th. In covered broken ground outposts should not be far in advance of the camp.

8th. It is desirable to attach a few cavalry to the important posts for the purpose of reporting quickly to the rear.

9th. The less formidable the outposts the greater the necessity of vigilance in the main body.

10th. Above all it is absolutely necessary that the sound of a musket shot may be heard from post to post throughout the whole line. It is also to be considered that many pickets, though weak, give more security to the main guards than a few strong ones.

Officers and men engaged on outpost duty must always bear in mind that the whole safety of the army, the success of all the operations undertaken

by it, depend to a great extent upon their vigilance and activity: they should never forget that they are placed on that duty to form an impenetrable curtain behind which the army, without fear of discovery by the enemy, may execute all its movements, whilst, on the other hand, they should endeavour to find out every movement of the enemy.

If the army itself is in a very strong position, easily to be defended, it is not necessary to push the advance posts to such a distance as is otherwise desirable.

CHAPTER II.

Formation of Chain of Outposts.

On the arrival of the detachments, told off for the formation of the chain of outposts, upon the new ground where they are to be placed, they push forward quickly, drive in any of the enemy's parties and spreading out upon the roads, place strong detachments on every approach to the camp. These detachments are the main guards: these then immediately throw out on their front and flanks, smaller parties which form the picquets or *out-picquets*. These outpicquets then place their sentries in front and to the flanks, and at once open up communication with the picquets on either flank.

The officers in command of picquets then send out patrols in every direction beyond the line of sentries, to reconnoitre the ground to see if possible the position of the enemies posts, to make sure

that the sentries are all properly placed and that the front is clear. It is to be particularly observed that until the return of these patrols, the men of the picquets are on no account to leave the ranks for a moment, or in the case of cavalry to dismount. Until the advanced posts are placed, the army should remain under arms. As soon as this is done the field officer's attention should be directed to the occupation of all points of ground capable of defence, which, at the same time, command the approaches of the position. When the picquets and main guards are finally posted, the officer should then use every effort to place his posts in a state of defence, by all the natural and artificial means in his power; defensive preparations of this nature protect the picquets, impede the march of the enemy, prevent surprise, inflict greater loss on the opposing forces in their efforts to carry them, and give the main army more time to prepare. The best means of hurriedly defending posts of this nature will be treated more at large in the latter part of this work.

The field officer should also see that the communication between the several picquets and main guards, and between picquets and their advances, is carefully attended to, both as regards patrolling and intermediate posts.

In order to support the main guards in case of an attack in force, it is necessary, as I have before stated, to have a certain portion of the army in camp, in a state of stricter preparation than the rest, so as to be able to march at once to the support of the threatened points; these are called inlying picquets. Specific reserves are also told off and ready in addition to the inlying picquets;

they move to the support of their main guards by the nearest route on the first alarm.

Officers in command of outposts should be careful in posting the main guards not to push them across bridges, causeways, or through defiles, except when the main body is in position in close proximity to the defiles, and the advanced posts are not protected by artillery.

A picquet ought never to be posted within musket shot of covered ground, as opposite to the edge of a wood, or in dells or defiles of any kind, or in a position where an enemy could have any opportunity of gaining its flank unperceived.

In the day time, and in a clear open country, sentries need not be placed so close together or so close to the picquets as in covered broken ground at night or in close foggy weather.

At night or in foggy weather it is desirable, if possible, to move the position of the picquets and sentries, to draw them in closer to the main body and closer to each other, as this is apt to baffle the enemy's observation of the position of the posts during the day.

Although this is a good general rule in some cases it cannot be followed as in case of picquets placed in rear of bridges, or at the entrance of defiles; but in this case, if the chain falls back these special posts should be strengthened, and intermediate posts placed to give prompt assistance in case of attack. It would be prudent at night to withdraw picquets which have been in advance of bridges during the day and let them occupy the *debouché* of the bridge or causeway, with a few sentries.

Great care should be taken in placing picquets

to place them out of view of the enemy's posts, as for instance, behind hedges, buildings, groves, eminences, &c., being careful to see that the flanks and rear are open to view. Sentries should also as much as possible be concealed from the enemy, but, at the same time, should have as clear and extended a view as can be obtained.

If picquets for the sake of concealment are placed in ravines, or hollow ground, it is necessary to select a spot as near as possible to the post, upon which the picquet and intermediate posts can assemble upon the first alarm, as it would be impossible to strengthen a position in a dell or ravine so as to resist an attack.

If it is necessary for a picquet to occupy a wood it is desirable to place the sentries just within the outer border of the wood toward the enemy, the picquet taking up a position about 200 yards within the wood; but in a disposition of this nature the picquet, instead of waiting for the sentries to fall back on it, will, on the first alarm, move up at once to the line of sentries, and make a stand on the border of the wood, so as to prevent the enemy from having the advantage which the picquet would possess from the covering afforded by the trees. If the sentries can be placed with advantage beyond the wood then the picquet should be placed just within the outer edge.

A picquet should never be placed within musket shot of the houses of a village, or close to hedges, or woods, for a position of this kind would be very difficult to hold, if the enemy were to obtain possession of such cover. In case a picquet is placed near a village it should be placed on its outskirts, on the side toward which the enemy

would advance, making arrangements to check his advance by breastworks, abattis, &c. If cavalry are in the picquet as well as infantry, one arm should be placed on the road and the other concealed on one side, according to the nature of the ground, so that one could check the advance while the other attacked him in flank.

If several roads unite at some distance in front of where a picquet should be placed, it will take post at proper distance from the junction, and occupy the point of junction with videttes and sentries. If the point of junction is not far from where the picquet ought to be, it should occupy the point itself, and push out videttes or sentries on all the approaches. If two roads running parallel towards the rear of the picquet, unite at some distance in its rear, it should be placed equidistant from the two flank roads, and should post videttes on both roads, and on all the approaches. Circumstances of locality must however regulate these general principles in special cases.

High ground is very favourable for picquets, if so situated as to admit of defending the roads, by which the enemy must debouch. And when the slopes towards the enemy are clear and open, affording no cover to a hostile advance, and when the ground to the rear will admit of supports being brought up readily, cavalry picquets should not be placed on ground which is only suitable for defence, but they will be effective where the ground slopes gently towards the enemy.

If cavalry and infantry are united in the picquet, the cavalry should take up position in the open fields, the infantry supporting or flanking them as they can best find cover.

In posting outposts along the bank of a river, the greatest care should be taken to watch and defend those points where the river bends towards the enemy, for it is on such points that the enemy will attempt to force a passage, the conformation of the ground often enabling them from their side of the river to open a cross fire across the tongue or projection of land which is made by the bend or curve of the river. In this case small alarm posts and double sentries should be placed on these curves, the picquet a little to the rear, protected as much as possible from artillery fire, with a strong main guard in the vicinity to support the picquet. Under no advantages of ground can these precautions be safely neglected.

Picquets ought not to be placed on the front of bridges and causeways of great length, unless the head of the bridge is protected by a *tête-de-pont* or some strong ground. If the fire of a main guard posted near the *debouché* of the bridge can cover the retreat of the picquet, it may in some instances be pushed across; but it is better to post small alarm posts or double sentries on the other side. In cases like this materials should be in readiness to stop up the bridge or causeway, and preparations even made for destroying bridges, though in no case, except by superior orders, should any defile be barricaded so effectually, as to cause any great delay in opening up again the passage. These barricades or stoppages should be made near the position to prevent the enemy from attempting under cover of night to re-establish the passage, or even approach the barricade without exposing himself to our fire, if over a river the obstruction ought to be made where the water is

deepest, if the river is not of sufficient depth to prevent fording in its whole breadth. If planks, beams, &c. are removed they should not be thrown carelessly into the water, as they may be required for the re-construction of the communication.

It is dangerous to post a chain of outposts too near the main body, for the less the distance the greater the facility of suddenly attacking the picquets in force, driving them in and surprising the camp or bivouac itself before the troops can form. The only means of avoiding this danger is by imposing a much stricter vigilance among the main body, by which the fatigue of the soldier is considerably increased. On the other hand if the distance is too great the sentries and videttes cannot fall back with as much security upon the pickets and the pickets upon the supports, and there is danger of portions of the chain being lost.

In-lying picquets and reserves should be instructed in case of alarm as to what point of the chain they are to support, so as to move up without confusion or delay. For this purpose they must be made acquainted with the nearest paths or roads. In-lying picquets are sometimes employed at night and in foggy weather in strengthening the chain of outposts, and supplying defects in it; whenever they are employed in this way fresh bodies are told off to supply their place in the camp.

In some instances when the enemy is distant two marches, and the General has great confidence in his source of information, the reserves and in-lying picquets are dispensed with; the patrols, especially of cavalry, being in that case constantly in motion, and detached scouring parties being also on the alert.

In case the main body is not of sufficient strength to supply a complete chain of outposts at the regular distance, the line of main guards is left out, and the chain of picquets posted at half distance. In this case the main body is in some measure the Grand Guard, or Reserve, and must be ready to stand to arms at a moment's notice. This is only done in cases of necessity, as when the army halts for a few hours, and is under arms during the whole time, or when the enemy is at a distance.

CHAPTER III.

Posting Videttes and Sentries, and their Duties.

As the principal duty of sentries and videttes is to give notice to their picquets of any threatened attack of the enemy, so that they may form to resist them, and notify the posts on either side of them, the greatest care must be taken to place them in positions which will give the widest possible scope to their observation.

Those points of ground from which a clear view to the front and flanks can best be obtained, must be carefully selected on which to post the sentries. In flat level country where there are no eminences on which to post them, church steeples, high buildings and trees must be used to supply the place of elevated points of ground. But in these cases it is desirable, in order to save time, to place a second sentry below, in order to signal, or carry the report of the looker out to the picquet.

At night, the sentries or videttes should generally be withdrawn from the heights and placed behind the crest, as it is impossible from the high ground to see at night what is going on in the flat or hollow, while, on the other hand, anything moving over the crest of the hill (especially in clear nights) is easily seen against the sky from below. The enemy, also, to avoid being seen, would certainly direct his movements along the lowest ground. In order to obtain the full advantage, a sentry watching a road must take care that the eye does not rest on any dark background, but upon the sky, or his observation would be of no effect.

Sentries at night should be drawn closer to each other, and to their picquets, and re-inforced; for the security of the whole chain, and of each individual sentry, depends entirely upon the connection and mutual vigilance. At night sentries depend more upon the sense of hearing than of sight, and by placing the ear to the ground the march of troops can generally be distinguished at a much greater distance than otherwise. To give full play to the sense of hearing, sentries should not be placed, at night, near mills, rushing waters, or trees; nor should they have the collars of their cloaks or coats turned up, or the ears of their caps down.

If sentries are posted double, and any movement is perceptible in the enemy's camp, such as the moving of columns, cavalry or artillery, one man runs in while the other continues his observation. If posted singly, he makes the signal previously fixed upon to the post of communication, which passes it to the picquet. Cavalry videttes signal when any party from the enemy is

seen approaching, by circling their horses at a walk, trot, or gallop, according to the number of the approaching force. If it be cavalry only, both videttes circle to the right; if infantry, both to the left; if cavalry and infantry, one to the right and the other to the left. If a cavalry vidette is posted singly he circles to the right and to the left in the same manner as if there was another with him; and, if there is a mixed force of the enemy approaching, he circles first to the right and then to the left, in the shape of the figure 8. If they require a party from the picquet, they place the helmet or chaco on the muzzle of the carbine and raise it well above the head.

When the sentry or vidette is so posted that, from darkness, distance, fog, or wind, his voice or signal cannot be heard or seen by the sentry of communication, he must wait until he is certain that the enemy is advancing towards the position, and then give the alarm by firing. If the matter is not urgent he must wait the arrival of the next patrol, and report accordingly.

The sentry of communication posted between the advanced line and the picquet, on seeing the signal, or hearing the voice of the advanced sentry, will run in and report the circumstance to the officer in command, who will go himself or send a non-commissioned officer to ascertain the cause of it. All sentries, videttes, and advanced parties must alarm their picquets if, during the night, the noise of artillery or the step of horses is heard. When sentries are double one man may run forward some one hundred yards, lie down, and listen with his ear to the ground.

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the alarm by firing; and, on their nearer approach, it is followed by a second shot—the sentry retiring slowly towards his picquet, keeping the enemy in view. On a second shot from the same sentry being heard, the alarm is repeated along the whole chain, which falls back upon its picquet, preserving its extended order. If the enemy pushes forward briskly, the sentries must fire repeatedly, as a signal for the whole line to fall back on the supports, being careful, in retiring, to open in the centre and form on the flanks, so as to clear the front of the picquets.

Sentries and videttes, at night, as a security against surprise, must preserve a perfect stillness, and constant vigilance; and no conversation can, on any account, be permitted. If, in spite of all precautions, a sentry or party are surprised, it is imperatively necessary for them to alarm the line by firing; and, if a man should chance to escape, he must make his way to the nearest post, and report. If anyone approaches a sentry at night, he challenges in an under tone; and, if no answer is given, he must fire and retire forty or fifty yards, re-loading immediately. If nothing follows, he will, on the arrival of the patrol sent to discover the cause of the alarm, resume his post. If the sentries are double, one reserves his fire in support of his comrade. In which case both sentries stand fast.

Videttes, sentries, and small parties thrown forward over bridges which have been blown up or barricaded, must fire on an advancing enemy, and retire separately or conceal themselves. They should never take refuge in houses or barns, as the enemy is sure to seek them there, and no escape is left to them.

Sentries cannot permit any one to pass beyond their line, even when the enemy is at a distance, or the individual has a pass. A sentry has no business to examine papers or authority to act upon them; any person endeavouring so to pass must be made a prisoner or shot if he attempts to escape.

The same precautions must be taken in case of persons advancing to the line from without. The sentries must challenge at about 100 yards and if the person proves to be a deserter he must be directed to lay down his arms and walk away from them. He must then be detained until the patrol arrives, unless the sentry can signal to the contiguous post. If several deserters approach the greatest precaution must be observed, as this is often a mask, under which they hope to surprise the post.

It was by neglect of these precautions that the Prussian army under Frederick the Great, was surprised at Hochkirch, 16th October, 1758. Deserters coming in such numbers as to overpower the Prussian main guards.

Videttes, and sentries, will not allow armed parties in uniform having the appearance of allies to pass the chain of sentries until examined by a patrol. Such parties must be kept at a distance from the post and their presence immediately reported. When patrols and rounds come up the ordinary precautions against surprise must not be dispensed with. If posted double one man goes forward to the halted party and finds out if all is well, the other remains ready to fire; if all is well the word "pass" is given and the patrol moves on. Flags of Truce are also challenged, and halted until examined by a patrol.

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of the enemy's videttes and posts, if they are within view, the hours at which they are relieved and visited, the direction and strength of their patrols, and the hours at which they go out and also all changes in their posts, which they must report to the officer in command of the patrols and also of the picquet.

If a sentry or vidette discovers a party of the enemy within the advanced chain he must fire immediately and repeatedly to give the alarm : and the nearest sentries or parties if cut off from their own picquets must make their way to some adjacent post.

When a vidette hears anything at night that seems suspicious, he should advance a few paces, to find out if possible what it is : if the noise continues the vidette should fire and join his outpost, but he should take care not to fire needlessly as any animal or the rustling of leaves might have occasioned it.

If a man deserts from the advanced post the commander should be immediately informed and patrols detached to acquaint all the videttes and outposts of the circumstance. In this case the countersign ought to be immediately changed.

When an envoy from the enemy approaches the line of outposts he should be accompanied by a drummer or trumpeter if not he should be made a prisoner, and sent on immediately to the main guard and to the head quarters. The greatest care should always be taken by videttes and sentries, as well as by officers commanding detached parties to prevent messengers under a flag of truce from obtaining any information, either from the men of post or by observation. If the army is executing a

movement which should be concealed from the enemy, the envoy should be detained until it is executed.

CHAPTER IV.

Patrols and their duties.

Patrols are of two kinds, those which patrol to the front, and those which patrol along the chain. The object of the former is to discover the enemy, and obtain information of his movements, the duty of the latter is to watch over the vigilance of the parties composing the chain, and to keep up the communication with the contiguous posts. Patrols sent out by picquets can only consist of a very few men, and the distance over which they patrol must depend entirely upon circumstances.

If a patrol moving to the front should happen to meet a strong body of the enemy advancing upon the position, it will immediately give the alarm by firing, it will then take up a position to check their advance or will retire according to the nature of the ground, the strength of the opposing party, and other circumstances, sending at once a man to report the fact to the picquet. If the enemy advances very slowly or takes up a defensive position, the patrol will regulate its movements accordingly, keeping him in view. If the patrol is formed of cavalry it may detach two men to observe the enemy more closely. If the opposing column pushes forward vigorously, the patrol retires firing continually during the retreat, being careful to fall

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back upon one flank of the picquet, upon which it is retiring. If the patrol in its advance meets a weak patrol of the enemy, it will fire the alarm to excite the vigilance of the chain of sentries, as the presence of weak patrols generally indicate the proximity of stronger bodies. It will not be necessary to fire in case the ground is very open, and it can be seen that there are not large parties near. The patrol in this case does not retire, but posting itself on favourable ground, observes the enemy, and awaits the arrival of the next rounds. If the patrol meets a body of the enemy's troops within the advanced chain, it opens at once a brisk fire, and acts otherwise as circumstances dictate.

All sentries incapable of duty or negligence on their posts, on the arrival of the patrols are to be immediately relieved and taken back to the picquet. Important information should be at once conveyed to the picquet by a man detached for that purpose, important matters are reported on the return of the patrol.

The following are the general rules for sending out patrols :—

1st. The main guards patrol towards their picquets and other outposts (exclusive of grand patrols), and on their flanks towards the contiguous main guards and posts of communication from whence the patrolling is continued.

2nd. Picquets patrol along their chain and towards the enemy, and also to the adjoining picquets and posts of communication.

3rd. Patrols of communication between the several posts of the chain ordinarily go every two or three hours. Patrols from the main guards to their picquets every hour, the patrolling commencing

ing at daylight and continued at regular intervals during the 24 hours.

4th. The second patrols march off when it is calculated that the first have reached the farthest point of their round, and so on, so that two patrols one in each direction, are constantly in motion. The severity of this duty may in some instances be lessened by not marching off the second patrol until the return of their first. This can only be permitted when the enemy is at a distance.

5th. Extra patrols are sent out when a shot is heard in the line of videttes or from a patrolling party, or if repeated firing is heard from some of the distant posts. In this case the patrol takes the nearest road to the adjoining picquet in the direction of the alarm, and as every post does this the actual cause may soon be communicated, especially when cavalry patrols are employed. Extra patrols are also sent out if any movement is signalled or deserters are coming in, or in case of any special report coming in which may require investigation or attention.

CHAPTER V.

Duties of Officers on Outpost Duty.

The command of a cordon of outposts should be entrusted to a field officer, because, from his position he is necessarily the soul of the system of defence: all the troops connected with this duty, are under his orders, all reports are made to him, and from him proceed all the orders relating to the

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general arrangements of the chain. The field officer's post is usually fixed in a central position among those posts which cover the most important avenues to the camp—and in rear of the line of main guards. Here he should place his main reserve. His duty requires him to go therounds from time to time, so that every part of the line of defence may be under his supervision and may feel the influence of his presence. But whenever he quits his post on visiting rounds or inspection of a portion of the chain, he leaves behind an officer whom he deposes to take charge of his bivouac, to receive reports, and to give instructions. This substitute must be made acquainted with the points of the chain he proposes visiting, and the shortest road of communication to him. If time and distance admit, his actual position should be from time to time communicated by orderly, to the officer at the bivouac.

Each picquet or post must be made acquainted with the shortest and best roads to the bivouac of the field officer, and the reserves must have specific directions, under what circumstances, what picquets, and by which roads they are to move forward in support.

At night and towards morning, the field officer stations himself with the main guard, most likely to be attacked, and notifies his position to the whole chain of outposts, and also to the reserves. He will repair to any threatened spot in case of alarm and make his dispositions according to the circumstances, if the alarm appear of no importance, he will leave a mounted officer with an orderly to watch the progress of affairs, and report to him in case matters assume a serious shape.

If the alarm is heard from several points at once he sends officers on whose judgment he can rely, to the several points to report on the cause of such firing, remaining himself with the grand reserves, or proceeding to the most important posts, leaving careful directions where he is to be found.

In visiting the chain of posts, the field officer carefully examines the exact position of each post, corrects any faults he may see in their disposition, and sees that every part of the chain is on the alert.

The officer in charge of a post, after first making good his post, prepares and sends off his report to the field officer, as soon as the morning patrols have returned, and the old picquets have marched off. The orderly who is sent to the rear with this report, does not return to his picquet, but remains at the field officer's post as an orderly, so that a certain number of men are assembled in this way, at the officer's bivouac, who are acquainted with the nearest roads to their respective posts. A second report is sent in at noon and another in the evening. These reports state the number of detached parties, videttes or sentries; how posted, the state of communication with contiguous posts, the orders for the patrols, any intelligence that may have been obtained, as well as any change in the disposition of his own men.

The officers in command of out picquets, should place an old soldier with a young one if posted double, taking care that no man knows beforehand the post he is to occupy.

The officer commanding the post immediately opposite to where a flag of truce arrives from the enemy's lines, proceeds to the point and having answered the signal, calls upon the flag to ap-

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proach, the communication is then made or the despatches delivered over and a receipt given. If an immediate answer be required or if the officer demands to be conducted to head quarters or to the field officer, the officer in command of the picquet will forward a report of the circumstance and place the flag in a position where the line of posts cannot be overlooked to wait until an answer is received. If permission is granted to pass to head quarters, the flag must be blindfolded and conducted under proper escort through the lines. If the enemy's flag approaches under escort, it must be intimated to him at once that no parley will be held until it is completely withdrawn, its presence being entirely unnecessary.

No one can communicate with the flag except the picquet officer, and the greatest strictness must be enforced in this respect; he must confine himself to the object of its approach, and take no verbal communication. The flag is entirely under his charge until he is dismissed or sent to head quarters, and all communications by staff officers should be made in his presence.

CHAPTER VI.

Relieving Outposts, &c.

The period at which an attack is most likely to be made, if meditated, is about an hour or so before dawn. In consequence of this the reliefs generally march off so as to arrive on their several posts about that time in the morning. By this arrangement the whole strength of the chain of posts is doubled at the time when a greater accession of strength is

most likely to be needed. During the time occupied in the relief, the two picquets become one under the command of the senior officer. The relief of the videttes, sentries and advanced posts, then takes place. While this is going on the post is handed over to the officer of the relief, who ascertains the number and posts of all the videttes, &c., the number of patrols and their routes, all the information known of the enemy's posts, together with the fullest information as to all the roads, paths, &c., between his post and the contiguous posts, and the station of the field officer.

The morning grand patrols go out at the time the relief of the posts takes place; each picquet at the same time sending out their common patrols to front and flank. These patrols are found, in common, to enable the new picquets to become acquainted with the roads, &c.

As soon as the morning grand patrol returns and reports "all's well," the old picquets march off, unless the weather is foggy, when they remain until the neighborhood is to a certain extent open to view; or unless some movement is reported in the enemy's camp.

The officer of the old picquet on the relief should conduct the officer of the new picquet along the chain of sentries during the relief, pointing out to him the enemy's posts, as well as their own contiguous posts.

CHAPTER VII.

Duties of Picquets.

A picquet should be in a constant state of readiness, prepared to stand to arms at any moment

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while on duty. The arms must, therefore be kept in the most serviceable condition; the packs of the infantry piled close to the arms, and the cavalry horses saddled.

Watering parties can only be detached at the hour when it is at least probable that they will be required. Only small numbers should go at a time, and they should always go armed, and should return with the least delay possible.

If the weather is very cold the picquet may be permitted to place themselves around the fires before midnight. But after midnight one half or one third must be under arms in the strictest sense of the word; but about two hours before day break the whole picquet is placed under arms and remains in strict preparation until the morning patrols have returned.

Cavalry picquets feed their horses, by divisions, three times a day—first on the return of the morning patrols, second at noon, and third an hour before dark. Water should be brought, if possible, if not small parties should go to water at a time; these parties must return instantly on hearing a shot in the advance line of sentries. When the enemy is very close the post should stand to arms on the approach of night.

The men might be allowed to sit down before midnight with their arms in their hands, by sections or subdivisions. Cavalry, by turns, can dismount, but after midnight, until break of day, the infantry should be under arms, and the cavalry mounted.

If the enemy is at a distance the severity of this duty may be considerably lessened, especially in the day time, by allowing repose to the picquets by turns.

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When a picquet has a fire it should always be placed so as to be concealed from observation as much as possible ; the alarm post of the picquet should be in rear of the fire, so as to prevent the picquet from being seen when drawn up, and to expose the enemy in coming up to attack them.

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PART II.

DEFENCE OF OUTPOSTS.

CHAPTER I.

General Principles of Defensive Works.

In all fortifications, both permanent and temporary, every part of the line should if possible be seen and protected by another, by the flank fire of artillery or musketry at an effective range. Lines are best disposed for this purpose when they stand perpendicularly to each other, as in this position an enemy attacking either portion of the line is liable to a fire upon his flank from the other; this is what is understood by one line flanking another.

In preparing defensive works in a village or town this principle would be applied by occupying houses standing at right angles with each other—breastworks being constructed across the streets or in such a manner as to give a flanking fire along those sides of the houses, which could not be seen from each other.

In applying this principle of flanking in the defence of a country or farm house, the relative position of the out-houses, stables, walls, &c., would be studied, and if necessary to carry out the principle, some temporary work should be made. All

parts of a line of Works should be equally strong, and where nature or local circumstances have withheld their aid obstructions should be multiplied in order to compensate for their weakness ; and in order to equalize the whole line of defence, those situations which are most exposed to attack, should be made the most difficult of access.

The ground within range of all works of a defensive nature should be open to the fire of the defenders, and as clear of obstructions as possible, so that an enemy in advancing to the attack should not be able to find cover, but completely exposed when he approaches. In this way buildings and fences close in front of positions should be levelled, and ditches filled up ; the surface of all slopes should be seen if possible to the very foot of them, as an enemy might advance and form under cover at a moderate distance from the work.

There should also be a clear and uninterrupted communication along the whole line of works, no matter what nature they are ; this is to enable the force or a proportion of it to assemble readily when it may be most wanted. This communication should be shorter than those by which the enemy could change his dispositions during the attack.

It is necessary to make obstructions within the short range of musketry in front of all works of a temporary character, so as to break the order of the assailants and detain them in confusion under a close and deadly fire, if they persist in attempting to force their way through. It is half the battle to break the order of the enemy, and throw him into confusion under fire. It is very rarely that troops can be reformed under such circumstances, and an attack in disorder rarely if ever succeeds.

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The description of temporary posts naturally falls under three heads, viz. :—

1st. Such as are artificially constructed throughout.

2nd. Such as from favorable circumstances as to the ground, situation of houses, &c., only require to have existing objects improved upon to make them equally defensible.

3rd. Which is the most common a union of these two.

If a choice can be made in the selection of a Post the inequalities of the ground should be considered as well as the objects upon it, such as buildings, fences, &c. ; and whether from their relative situation the position could be easily convertible into a fortified post, with the least possible labor, in the least possible time.

A position ought not to be commanded especially on the flanks within the ordinary range of a field piece ; and in choosing a post the soil should if possible be of a nature easily worked, especially if from the nature of the post it is necessary to have trenches or ditches made, the amount of materials for abattis, breastworks, &c. ought also to be considered. A post should always have secure means of retreat, and at the same time be difficult of access.

CHAPTER II.

General Plan of Temporary Works.

In arranging the general plan for defending a chosen position with temporary works, there are

many considerations to which the most particular attention must be paid. The following are the principal:—

1. The position must be carefully examined in order to ascertain what figure of a work will be most available, in order to obtain the greatest quantity of fire over the points most accessible to attack; and in order that the general contour of the place may fall in with the ground and turn to the best account the buildings, fences, &c., upon it.

2. The object the work is intended to fulfil in reference to the force with which it is in connexion, as well as the distance it is removed from that force, whether instant support may be expected or not, or whether it is to be defended to the last extremity.

3. Its situation with respect to the distance from the enemy, &c., whether it is likely to be attacked by overwhelming forces or only subject to sudden attacks of small parties of cavalry or infantry. If artillery is likely to be brought up earthen works, if merely for the purposes of cover, are better than buildings, stockades, &c., the parapets in that case must be thicker. If it can be surrounded the defences must extend all round.

4. The number of men available for defence, it being a fixed maxim that a force is better concentrated than too much distributed; and it is therefore injudicious to make works of greater extent than can be well manned and vigorously defended; the proper proportion would be one file of men to each yard of breastwork in small works, with an addition of a fourth or a sixth in reserve in larger works.

5. The number of men available for work, the

tools available for them to work with, so as not to commence on more work than can be well done, it being a very important point to suit the works to the time there is to make them in.

6. The nature of materials convenient to make use of, as this will necessarily have a great influence on the details of the plan, and will afford opportunity for the exercise of considerable tact and intelligence, in appropriating and adapting the means at hand for carrying the general plan into effect, and securing its objects with the least possible labour. No one not conversant with work of this description can have any idea of the great saving of time and labour that may be effected by taking advantage of what might seem at a casual glance to be very unimportant local features.

CHAPTER III.

Details of Execution.

In making temporary works a variety of tools will be required which may be gathered from the inhabitants, or which must otherwise be furnished to detachments who are expected to defend and strengthen a post.

These tools are :

1. For sinking trenches and cutting down trees and constructing abattis, spades, shovels, pick-axes and axes.

2. For loopholing walls and preparing timber, stockades, &c., sledgehammers, handborers, crow bars, saws, augurs, and spike nails.

3. For general service, sand bags.

These tools would be required in different proportions in accordance with the nature of the work to be constructed. As for example, in the open field pick-axes and shovels would be mainly wanted ; if an abattis could be made, axes would be required ; if houses were to be loopholed and barricaded, the other tools would be in greater requisition. Sand bags are very useful for many purposes, as for protecting men firing over a parapet or breast-work, or for quickly blocking up the lower parts of windows, &c. One man can carry one hundred empty sand bags, weighing about 60 lbs., each of which will contain one bushel of earth, and when full they are at ordinary range musket proof.

In constructing temporary works, care must be taken to put each man at work with the tool he has been accustomed to use. As carpenters, to use the saws and axes ; miners, blacksmiths, &c., to be employed to loop hole walls ; labourers where the spade and pick-axe are required. The least handy men can be employed in collecting materials ; they can also be selected for the first tour of duty as patrols and sentries.

With reference to the quantity of work that can be done in a given time it can be calculated, as an average, that an ordinary labourer will dig out one cubic yard or 27 cubic feet of earth in an hour in middling soil, and can work at that rate for about eight hours or even more ; and that each man requires about six feet in length, to give him distance enough to work with perfect freedom. In case of emergency this distance could be reduced to $4\frac{1}{2}$ feet in length.

The first and simplest kind of artificial cover is what is known as the rifle pit, which is a small hole with the ground thrown out to the front as a protection. A defence of this kind can be thrown up very quickly, but is only useful as a cover, being of no avail as an obstruction or defence against an enemy.

The next step, in fortifying a post, is to form a lengthened trench, with the ground thrown out to the front. This is nothing more than a continuous rifle pit; and, as in the case of rifle-pits, is only useful as a cover. If there is time to make a more substantial breastwork than this last, it can be effected by making a ditch on each side of the parapet, the ground being thrown to the centre. This species of temporary work can be speedily thrown up, and has the advantage of enabling men to work on both sides of the parapet at the same time. It gives cover, and the ditch to the front is a species of obstacle to the enemy—it is the first approach to an obstruction.

Breastworks, or defences, are improved on this principle by leaving out the trench behind the parapet and placing it altogether in front. It will be seen at once that, by placing the ditch before the wall, the mound must be much higher and the ditch consequently much deeper, to give a cover to the defender, than when he gets the additional cover by standing in the ditch. The larger the ditch the greater the obstruction to an attacking force.

Sometimes, when the ditch is very deep and wide, the mound thrown out is so high that a man standing on the level ground could not fire over it. In this case, a step is made on the inside, about

eighteen inches wide, and about 4 feet 6 inches from the top of the parapet, so that a man can conveniently fire over it. This step is called the banquette.

If the ground is very rocky, or hard, as in a road or street, and materials are convenient, it may be far easier and more expeditious to make a cover by forming a breastwork with rubbish, or materials brought to the spot in baskets, sand-bags, or barrows. In a street, barrels of salt, or even of flour or meat, might be piled up in a way to give a very effectual cover. At the battle of New Orleans, General Jackson, with an inferior force, defeated the English army from behind breastworks improvised with cotton bales. At Navy Island, in 1837, cover was obtained by piling up log heaps. In this country, very effective breastworks could be made by piling the ordinary fence rails between stakes driven into the ground in two rows, about two or three feet apart, tying the tops together with wire or rope, to prevent them spreading; or, fastening them together with pegs wedged at one end in the manner of the common straight rail fences of this country. The opening between the rails, under and above the pegs which connect the upright stakes, would make a good opening for firing through.

As soon as cover has been obtained by the men, the next point to be gained is to make the defences as difficult as possible to overcome in an attack by the enemy. This is accomplished by placing abattis and other obstructions within easy range of musketry fire from the entrenchments.

Entrenchments can be much strengthened by planting a row of pallisades in the ditch, or even

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by driving stakes in and sharpening them, or by planting brush at the bottom of the ditch in an upright position.

When an opening or passage is required through a breastwork or stockade, arrangements must be made so that it can be easily closed and defended. An opening must be laid out so as to prevent a fire through it, by having a screen in front or rear of the opening; and it is also necessary to have rough chevaux de frize, or gates, or something of the sort to close them up quickly. In making an opening through a barricade in a street, it can be done by making it in two parts, which overlap each other a few feet, leaving an opening between them, but at the same time preventing a direct fire along the street; or, what is a better plan still, to extend the barricade completely across the street, and making a communication around the end of it by breaking through the walls. In preparing a village for defence, communications must be broken through the walls of the houses along the line of defence, so as to secure a continuous communication from one end of the line to the other.

Defence of Walls.

Walls are readily made available for purposes of defence by loop-holing them according to the height and situation. Great care must be taken in loop-holing them, it being a general rule that the loop-holes must be so situated as to prevent an enemy from making use of them, if he succeeds in rushing up to them. This is done by making ground

of a different level on the outside, then on the inside ; for if an enemy could stand on the same level as the defenders, the loop-holes would equally serve the convenience of both parties, which is not the object for which they are made. Loop-holes should be 8 or 9 feet from the outside level, and on the inside the banquette should be about 4 feet 6 inches below them, which is the most convenient height for the average size of men. When the wall is high enough, not less than 18 inches should be left above for the purpose of protecting the men's heads in giving their fire.

These requisites can be attained in various ways. For example, if a wall were 10 feet high the loop-holes might be pierced within eighteen inches of the top, and a temporary stage might be made of casks, waggons, &c., or an earthen banquette might be made up on the inside for the defenders to fire from. In some cases where a very determined resistance was contemplated, a stage could be erected for the upper loop-holes, and another row pierced close to the ground, and a ditch dug inside to enable the men to get down to fire through them.

If the wall was only 6 feet high, the loop-holes should be pierced 4 feet 6 inches from the level, and a ditch dug on the outside to obtain the requisite height.

In a wall of this height the loop-holes should be made by breaking down the wall to the depth of about 2 feet in a narrow fissure. This is much the quickest way of loop-holing, as it can be done with a common pick-axe, if nothing better is at hand ; and, by afterwards blocking up the upper parts of the fissures with blocks of stone or wood, or by a

sand-bag, it would make them almost as safe as a loop-hole pierced through a wall. If the wall is very low so that men can fire over it, or there is no time to make loop-holes, a good protection can be obtained by laying a piece of square timber or the trunk of a tree, on top of the wall supported by blocks of wood or stone—the men firing through the opening of it—or sand-bags might be arranged on top of the wall, leaving loop-holes between them, or large stones might be piled up in lieu of sand-bags.

The ordinary grain bags in use among farmers in this country, of which numbers can be obtained in every town, village, or farm-house, could always be used as sand-bags.

In making loop-holes through walls, no regular form is necessary—they are merely openings to fire in the required direction, and should enable one to see the ground from within a few yards of the foot of the wall or building, to the extreme range of the musket, affording also the opportunity to fire a little to the right and left. In order to effect this, the dimensions will depend upon the height and thickness of the wall. The width of the wall outside should be not more than 3 inches; but, on the inside it might be of a width equal to the thickness of the wall.

Hand-borers—that is, short iron bars, steeled at the ends—are the most useful implements for breaking loop-holes through brick-work and masonry. They are held in the proper position by one man, another man striking them with a sledge-hammer. An ordinary crow-bar is very handy for this purpose, and it is a tool any one can use; a pick-axe can also be used to good effect in loop-holing walls,

especially as before stated in breaking open narrow fissures from the top of the wall.

If a wall of this nature is exposed to the fire of artillery, it will be very dangerous in consequence of the splinters that will fly from the wall whenever struck. By throwing ground out of a trench against the inside of the wall, to the thickness of a few feet, this danger will be in some degree averted, the trench may be either inside or outside; but, inside, it will give the best protection to the men. Of course a temporary intrenchment of this nature would not be shot-proof; but, the splinters would bury themselves, if the earth was some three or four feet thick.

Stockade Work.

Stockade work is made with the rough trunks of trees, cut into lengths of 12 or 14 feet, and from 10 to 15 inches in diameter. They are planted upright in a row, in a ditch about 3 feet deep, either with intervals for firing through or close together, with loop-holes cut through. In either case shorter pieces are planted in the interstices to protect the men. These pieces reach upwards 4 feet 6 inches from the banquette, or, in other words, to loop-holes. Stockades are, comparatively speaking, of little use, if attacked by artillery. They should be covered as much as possible from the fire of that force.

It is always necessary to have the means on hand of stopping up any breaches which might be made in stockade work, by artillery fire.

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CHAPTER IV.

Obstructions.

In front of temporary works of inconsiderable profile, and which in themselves do not present any serious obstacle to the assault of an enemy, it is absolutely necessary to place some obstructions if it is intended that the works shall be vigourously defended. Various expedients have been devised for this purpose, some of which I will explain. The best obstruction that can be hurriedly prepared is an abattis, which is made by cutting down trees and laying them side by side, with the tops outwards and the branches interlaced as much as possible—the small twigs should be cut off and the ends of the branches sharpened. If the trees are small it is necessary to fasten them, to prevent the enemy pulling them out, and making openings through them. This is done in various ways. Sometimes stakes are driven among them rather thickly, or heavy logs are laid across their but ends, or the buts buried in a small ditch. If the trees are very large so as not to be liable to be moved easily, these precautions are not necessary. If trees and brushwood stand pretty thick in front of the line, a breadth of some 30 yards just slashed down without being placed in any order will make a most serious obstacle to an attacking force.

Colonel DeSalabery, with a small number of Canadian Voltigeurs, repelled the advance of an American Army on the line of the Chateauguay river in 1813, by forming a strong abattis by felling trees towards the enemy.

In the forests of this country the tops might be

thrown down in this way, and by cutting off the trunks in lengths they might be formed into breast-works, by being rolled into continuous log heaps, while the tops of the trees, laying as they fell would form the abattis, in front of them: this could be adopted with great effect in occupying the border of a wood with a picquet, as is mentioned in a former page of this work. Stumps large enough to afford cover to a man, should be cut as close to the ground as possible: the small ones, should be cut 4 or 5 feet from the ground and left as a sort of obstruction.

Palisades form a very good obstruction. When not exposed to artillery fire, they are planted in a ditch about 2 or 3 feet deep with the ends nailed to a piece of timber laid along the bottom: this is to prevent them being pulled out. The palisades are made of trunks of young trees or saplings about 6 inches in diameter, and should rise about 7 feet above the ground: in this country the ordinary fence rails would serve the purpose well. A cross piece should be nailed to them near the top: they should be placed as open as possible, without allowing an enemy to get through. Care must be taken not to have them so close as to afford a protection to an opposing force. If these palisades were planted, leaning a little towards the enemy, they would be all the more difficult to get over.

Chevaux de frise are used more in permanent fortifications than in temporary works, such as I am treating of. They are made of iron or wood. They consist of a horizontal beam with stakes running through them at right angles and projecting some two or three feet. They are usually fixed on the glacis of permanent fortifications to check a

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storming party and throw it into confusion. Short pieces of chevaux de frise are, however, sometimes very useful in temporary fortifications, for the purpose of stopping up outlets through barricades or for doorways. If required, rough temporary pieces can easily be provided out of a few rails or pieces of scantling.

If a number of stakes are driven into the ground firmly, they are not easily passed over in close order. Holes about three feet deep, and the same diameter, and the earth piled in small heaps, will also have a material effect on rapid regular movements.

In fact, it must always be remembered, that whatever will cramp and impede the advance of a column and detain it under close fire, for no matter how short a period, is worth having, and ought not to be neglected. Even a cabbage garden is better than a bowling-green, where the assaulting column could come up at a full run.

If time were an object, which we must always assume, and we had plenty of men, the work should be laid out in separate portions, so as to have the men in a position to work to the best advantage without interfering with each other.

In front of a barricade in a street or defile, a pile of furniture, loosely thrown together, such as chairs, tables, &c., and wheelbarrows and waggon wheels turned, would make a very awkward obstacle to surmount.

CHAPTER V.

Defence of Buildings.

If a building forms part of a general line of defence, the front or the front and sides only may be required to be placed in a state of defence. But if it is an independent post, which it is necessary should be defended to the last extremity, every point must be equally looked to, the means of retreat, and of re-enforcing it being preserved if possible.

Churches, factories, prisons, and country houses, or any substantial building may be used for defensive purposes, but it is necessary if possible—

1st. That the building should command all positions in its neighborhood.

2nd. That it should be substantial, with suitable materials for defence, and have walls or projections that flank each other.

3rd. That its size should be in proportion to the number of men available for its defence.

4th. That it should be in a suitable situation for the object for which it is to be held and difficult of access while having a safe retreat.

It is almost impossible to find a building which will fill all these qualifications; but, nevertheless, these points should always be considered in choosing a building to place in a state of defence.

It is also to be remembered that though good strong walls are an advantage, yet, against musketry alone they ought not to exceed 2 or 3 feet in thickness, on account of the difficulty of piercing loop-holes through them. Of course, if artillery is likely to be brought against them, the heavier and

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stronger the walls are the better, and in this case no loop-holes should be made, but the musketry should be confined to the windows. Brick houses and brick garden walls are better for all purposes than stone; they are much easier pierced with loop-holes, and if exposed to artillery fire a round shot, merely breaks a small hole in the former, while in the latter the stone is broken up and large splinters fly from it in every direction, making it very dangerous to the defenders. Wooden houses do not afford protection against musketry or artillery, and can easily be set on fire. They, therefore, are of little or no use for defensive purposes, and should be avoided if possible. Thatched houses are also objectionable for fear of fire, and should be unroofed to prevent this danger.

Earthen works are preferable to houses when exposed to artillery fire, but they are not so defensible. An enemy cannot run his troops into a house, while sometimes earthen works are subject to intrusions of that character. A house inside of earthen works can often be very useful as a sort of keep, for the garrison to take refuge in, if the outer line is taken.

As a rough estimate of the number of men required for the defence of a house, it may be considered that one man to every 4 feet of wall around the interior of the lower story, one man to every 6 feet of the second story, and in the upper story or attic one man to every 8 feet would be quite sufficient with a reserve of about one sixth of the whole.

In preparing for the defence of a house and out-buildings, if there is any doubt about having sufficient time to complete the whole defences,

the most defensible points should be at once put in a condition to repel an immediate attack.

The defences in a case of this kind, should be executed in the following order.

1. Materials should be collected to barricade the doors and windows on the ground floor, such as boxes, casks, cart bodies, cinders, stones, brick, timber, &c., the doors and windows should be barricaded with these materials as soon as collected, and loop-holes made in them, and any obstruction outside which would give cover to an enemy should be levelled. The doors can be barricaded by placing the casks and boxes filled with cinders, rubbish, &c., against them to the height of 6 feet and loop-holes pierced through the door above; or the door-way could be bricked up loosely with loop-holes arranged, or timber could be built across the passage. If it is necessary to have an opening for making sorties or for affecting a retreat, the door itself could be made musket proof by nailing several thickness of plank to it, leaving it to open as usual and making arrangement for fastening it up.

Windows do not require to be barricaded so strongly as doors, unless an entrance could be effected through them. In barricading windows the principal object is to screen the defenders while firing through them. The windows should be filled to the height of 6 feet from the floor with any thing musket proof. Loop holes-must of course always be made, no matter whether the windows are filled up with timber, sand bags, carpets or blankets rolled up. If from want of time or other circumstances the windows could not be blocked up, a great coat or blanket should

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be hung across the window, the men fire under it over the sill, kneeling on the floor to do so. The glass should always be removed from windows before an attack, as it is very liable to injure the defenders when broken by musketry.

2. To sink ditches opposite the doors on the outside and make loop-holes in the upper windows—the ditches should be about 7 feet wide and 5 feet deep, and should be made also before the windows if the loop-holes are so low that an enemy might reach them.

3. To make loop-holes through the walls if they are not too thick, these loop-holes should be made every three feet in the spaces between the windows. Two tiers of them could sometimes be made. Communications must next be made all around the interior by breaking through the partitions and party walls, taking care at the same time to have the means to close these openings ready prepared. Openings should also be made in the upper floor to enable the men defending it, to fire down upon the assailants if they force the first floor, and preparations should be made for blocking up or throwing down the staircase to prevent a pursuit to the upper story. Balconies should be barricaded in front, and openings made in the floor to enable a fire to be directed downwards.

4. The next work to be done is to place abattis or other obstructions on the outside, and improve the defence of the house by the erection of tambours, &c. The abattis should be placed about 20 or 30 yards from the house in the manner before mentioned. If the building has no wings, porches or projections from which a flank fire can be obtained it will be well to construct something of a tempor-

ary character. Stockade work is the most convenient method of doing this. It may be made in the shape of two sides of a triangle in front of a door or window, It is made in accordance with the rules I have before described for stockade work. If made on the angle of the building a flank fire can be obtained along two sides of the house. In all cases there must be a means of communication from a tambour into the house, with preparations made for closing it up if necessary.

5. The next duty is to place the out-buildings, garden walls, &c. in a defensible state; which is done by loop-holing the walls, digging ditches in front, and placing abattis, &c., as I have already explained; communications must of course be opened between the different portions of the post. An exterior wall parallel to the house and close to it might be retained for the purposes of defence and by sloping up the ground on the outside of it, or laying abattis against it: the enemy could not use it as a cover.

In arranging posts of this kind it is absolutely necessary to make each portion so far independent of the remaining portion, that if one part, a building for instance, should happen to be taken, the rest would still be in a position to hold out, without the loss materially affecting the defence they could make by themselves.

It is almost incredible what a defence can be made in a substantial house, well prepared with resolute defenders. The siege of Saragossa in 1809 shows what can be done in defending streets and houses; while the defence of Hougomont shows the importance of a post of the nature we have been considering.

CHAPTER VI.

Defence of Villages.

In arranging for the defence of a village it is necessary that the general requisites which are required in a detached building or small post, should be looked for in determining whether a village is favorable for defensive purposes; and whether it offers facilities for executing the necessary works, so that they can be completed in the time that can be devoted to them. If possible there should be some substantial buildings near the exterior, so that they could be converted into strong salient points of the general line. It is also necessary to choose some building in the interior, such as a church or prison which could be made into a sort of citadel or keep.

It is sometimes only necessary to entrench villages on the front or on the front and flanks; but a village is often required to be enclosed all round.

If a village is to be held as an advanced post or forms part of a general line in front of an army, so that it can be instantly supported when attacked, it will usually be left open to the rear, and be only entrenched in the front. The first thing to be done in a post of this nature would be to barricade at once all the streets, roads and lanes on the front and flanks of the exposed side on the same principles which have been before mentioned with reference to barricades. Men at once being detailed for collecting materials of every description. Almost every article that can be carried can be of some use, either for the barricades or for a species of abattis or obstruction.

In arranging a general plan a few substantial buildings, not more than 150 or 200 yards apart, should be selected for the salient points, and should be at once prepared for defence on the principles already laid down for strengthening detached houses. All buildings, walls, ditches, &c., lying between these prominent points should be turned to account in connecting these points with breastworks, stockades, trenches, &c., bearing in mind the necessity of so arranging these connecting lines as to bring into play the principles of a flank defence, and at the same time give a good direct fire.

All streets and roads open to attack should be shut up by good barricades made in rear of the temporary obstructions; these can be made by ditch and breastwork, or if artillery cannot be brought to play, by stockade work. If time presses, bales of goods, hogsheads of sugar, sacks of corn, or even rolls of cloth, from a tailor's shop, would be very useful for these warlike purposes if they could be obtained.

In the depth of winter, in this country, a breastwork made of snow, sloped outwards, well soaked with water and allowed to freeze, would be musket proof, and would be a slippery breastwork to climb over. The mounds of ice on the lake shore were used with great effect, by the rebels at Point au Pelée on Lake Erie, during the rebellion.

These of course would only be useful in cold weather, when the ground could not be worked; but, it must be remembered that a day or two of thawing weather, would quickly make them but a delusion and a snare.

It is advisable, in streets, to build several barricades, to be disputed in succession, and if this is

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is done, the means of retreat must be secured through them. The houses flanking the barricades, must of course be loop-holed, to enable a flank fire to be directed on an enemy attacking the barricade.

It is necessary to destroy all houses in front of the defences, to level all fences, and fill up all ditches, which run parallel to the line of defence, and which could be used by the enemy as a cover in moving up the attack. All fences running at right-angles to the general line, and which can be seen, should be preserved, they would interfere with the flank movements of an attacking force, and therefore tend to embarrass his approach.

On the inside of the line of defence the reverse course should be followed. The fences perpendicular to the line should be leveled to give free communication from one end of the entrenchment to the other, while the parallel fences and ditches, if left, might in case of retreat be made use of to cover the retreat or to make a further defence. In all cases, however, it is necessary to open roads through these fences and over these ditches, not only for the purpose of enabling supports to be rapidly thrown forward, but also to allow of the safe retreat of the defenders, especially the artillery, if any are employed in the defence.

If time permits it is very important to have a second or even a third line of defence prepared to fall back on in case of defeat on the first line.

The above considerations refer to the defence of a village open to the rear. If the village is a detached post to be defended to the last, it must be entrenched on exactly the same principle as in the above case with the sole difference that it must be

enclosed all around, and, if possible, some strong building, such as a jail or church must be found and placed in a state of defence, and supplied with provisions, ammunition, &c., into which the defenders might retire if driven in by an overpowering force.

This citadel or keep should have free communication with all the outworks, if possible, it should be covered from artillery fire and should command the principal roads. Any walls or out buildings surrounding the building selected as a keep, should be strengthened as outworks so as to make the whole an independent post. These outworks would cover the retreat of the defenders, when driven in from the outer defences, especially if held in good order by the reserve. Sometimes it might be necessary to strengthen two or more buildings as keeps, but this depends so entirely on circumstances, on the number of men on the position, and strength of the buildings, &c. that no positive rules can be laid down, the officer in command must make the best use of the materials at his command, keeping in mind the general principles of defence.

CHAPTER VII.

Defence of Bridges.

The defence of a bridge is likely continually to be necessary on service, and the most important results may very often depend on successfully disputing the passage of a bridge, especially on the retreat of an army; and consequently, the prepar-

ations are often of very considerable extent and respectable strength, often partaking of the character of permanent fortifications; as for example, the fortifications between Arlington Heights and Washington, covering the bridges across the Potomac.

On outpost duty, however, it may often occur that an officer of a picquet may find himself placed in charge of a bridge, where the whole responsibility of preparing for the defence as well as the holding of it may depend entirely on himself.

In deciding on the general plan for the defence of a bridge, a great deal depends on the circumstances that affect it, and the object for which it is to be defended. If troops are to retire over the bridge, in the presence of superior forces, the defensive works should be made to the front of the works, for covering the retreat, and also to ensure its being held until the passage has been effected; other works might also be made in the rear of it for giving support, and for prolonging the resistance. If the protection of the bridge itself, was necessary, the same plan would be adopted. But, if the object of the defence was merely to dispute the passage, in order to cover a flank march, or for any other purpose, when it could not be destroyed, or it was desirable to preserve it, it would not be so necessary to erect works in front of the bridge; and, in all probability, the object would be better attained by placing the principal works for the defence in rear of the bridge, which is obviously the most advantageous position for purely defensive purposes.

In laying out the defences in rear of a bridge, it must be borne in mind that the bridge affords

the only accessible point of attack, the works should therefore be planned, so that the whole fire can be concentrated upon it.

It would be necessary in works of this nature to guard against an enfilade fire of either artillery or infantry. This would be effected either by so disposing the lines that their prolongations would fall on such places on the other side of the river as were inaccessible to guns; or, if that could not be done, it would be necessary to erect substantial high traverses at the extremities, and at intervals along the line subject to an enfilade fire. These traverses may be merely short portions of breastwork standing perpendicular to the general line.

These breastworks are made in the same way, with the same materials, and on the same principles as has been before mentioned, in treating of entrenchments, breastworks, stockades, &c.

A strong barricade ought always be made across the rear end of the bridge, and if the roadway of the bridge be composed of planks, they should be taken up and piled away carefully, if not used to make the breastwork. If the bridge is built of stone, with stone guards or parapets, they should be levelled to the road way, the materials would be useful in making breastworks and barricades, and by removing them it exposes an enemy endeavoring to cross to the flank fire of the defences in rear of the bridge.

The duty of watching a ford with a view to dispute any attempt of an enemy to avail himself of it would be fulfilled in following out the same principles, as far as they could be made applicable.

The defence however would in almost all cases be made from the safe side of the river, for the ford

would probably be in itself something of an obstacle or present at least the facility of creating one. In a narrow river a little obstruction might raise the water a few inches, and even that is worth having ; a few inches might make the difference of wetting pouches of the assailants or of creating a little more confusion. A few trees felled into a ford or below it with stray rubbish gates, hurdles, &c. would soon render a ford impassable or almost so.